Observations of the Pre-Protostellar Core in L1498

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ABSTRACT

L1498 is a classic example of a dense cold pre-protostellar core. To study the evolutionary status, the structure, dynamics, and chemical properties ofthis core we have obtained high spatial and high spectral resolution observations of molecules tracing densities 103 to 105 cm^{-3}. We observed CCS, NH_3, C_3H_2, and HC_7N with NASA's DSN 70 m antennas and the VLA. We also made continuum observations with 1S0 to delineate the core structure. Our observations show that the L1498 core has a chemically differentiated onion-shell structure, with NH_3 in the inner and CCS in the outer parts. The differences between the CCS, C_3H_2, and NH_3 emission suggest a time dependent evolution due to mass transfer and chemical evolution as the core evolves slowly.

This work was performed at the Jet Propulsion Laboratory, California Institute of Technology, under contract with the National Aeronautics and Space Administration.